

CLAIMS

1. Peptido-nucleic acid (PNA) comprising 12 to 24 nucleotide bases, said peptido-nucleic acid being complementary to the sense or antisense filament of human N-myc gene.
2. The peptido-nucleic acid (PNA) according to claim 1, in which antisense PNA (5'-TCCACCCAGCGCGTCC-3') is an only sequence complementary to 5'-UTR region of human N-myc gene.
3. The peptido-nucleic acid (PNA) according to claim 1, in which PNA is conjugated with a carrier that can get through the nuclear membrane of target cells expressing N-myc gene.
4. The conjugated peptido-nucleic acid (PNA) according to claim 3, in which said carrier is conjugated in 3' position to PNA sequence.
5. The peptido-nucleic acid (PNA) according to claims 3 and 4, in which said carrier is chosen among the following peptide sequences:
- PKKKRKV;
 - RQIKIWFQNRRMKWKK;
 - GWTLSAGYLLGKINLAALAKKIL;
 - (D)-KKWKMRRNQFWVKVQR;
 - GRKKRRQRRRPPQ;
 - YGRKKRRQRRR;
 - MSVLTPLLLRGLTGSARRLPVPRAKIHSL;
 - KFFKFFKFFK;
 - KKKK.
6. The peptido-nucleic acid (PNA) according to claims 3 to 5, in which conjugated PNA is a sense antigen PNA or an antisense antigen PNA.
7. The peptido-nucleic acid (PNA) according to claim 6, in which sense antigen PNA or antisense antigen PNA (5'-ATGCCGGGCATGATCT-3'; antisense antigen: 5'-

AGATCATGCCCGGCAT-3') are complementary to a exon 2 sequence of N-myc gene.

8. The peptido-nucleic acid (PNA) according to claim 3, in which sense antigen PNA or antisense antigen PNA are conjugated in 3' with a nuclear localization signal (NLS) deriving from SV40 virus (peptide sequence PKKKRKV).
9. A pharmaceutical composition comprising a peptido-nucleic acid PNA according to at least one of the claims 1 to 8.
10. Use of a peptido-nucleic acid PNA according to at least one of the claims 1 to 8 for preparing a pharmaceutical composition for treating genetic diseases.
11. Use of a peptido-nucleic acid PNA according to claim 10 for preparing a pharmaceutical composition for treating tumors associated to the expression of N-MYC protein.
12. Use of a peptido-nucleic acid PNA according to claim 10 or 11 for preparing a pharmaceutical composition for treating tumors such as neuroblastoma, retinoblastoma, medulloblastoma, glioblastoma, astrocytoma or lung small cell tumor, rhabdomyosarcoma, B-type lymphoblastic acute leukemias.